TECHNICAL NOTES

LAKE STATES FOREST EXPERIMENT STATION
U.S. DEPARTMENT OF AGRICULTURE · · FOREST SERVICE

No. 417

Cull in Sugar Maple Increased by Breakage of Large Limbs during Logging[1/]

Partial cutting offers many advantages in the northern hardwood forest type. In the practice of this form of management, however, the residual stand is subject to various types of logging injuries which afford entrance of wood-destroying and stain-producing fungi that result in cull and degrade. Recent studies at the Upper Peninsula Experimental Forest in northern Michigan show that much of the cull observed results from large-limb breakage. Eleven merchantable sugar maples were sampled from 49 acres of permanent plots and adjacent partial cutting compartments which had been logged 20 years previously. Trees damaged during the first logging operation were recorded in the original sample plot survey. These study trees were selected for detailed examination, felling, and dissection in the mill. A gross volume of 2,686 board feet (Scribner Log Rule) of sawtimber was examined for the possible effect large branch breakage might have on residual cull and on sawlog quality. In this sample 208 board feet of cull, or about 8 percent, resulted from decay and stain which entered at scars from limbs four inches in diameter and larger. This represents an average loss of 19 board feet per broken large-branch during the 20-year period (see table on back of sheet). In addition, logs with scars or stubs from large branches had an increased number of grade No. 3-B[2/] boards generally.

To reduce large-limb breakage during partial cutting operations in northern hardwood stands, it is recommended that leaning trees be removed during early improvement cuttings and that care be taken in determining the felling direction for others marked for cutting.

April 1954

GENE A. HESTERBERG,[3/] Collaborator

1/ A cooperative research project of the University of Michigan School of Natural Resources, the Lake States Forest Experiment Station, Division of Forest Pathology, and the Forest Products Laboratory.

2/ Northern Hardwood and Hemlock Association lumber grades.

3/ Assistant Professor of Forestry, Michigan College of Mining and Technology.

Cull in Sugar Maple Logs from Limbs Broken 20 Years Earlier

CULL DATA			LOG DATA	
Broken limb diameter	Cull volume	Type of defect	Height in trees	D.b.h. of t
Inches	Board feet		Number of logs	Inc
12	30	White rot	2	14
9	15	Green discoloration	1-1/2	17
8	60	White rot with black zone lines	2-1/2	18
8	32	White rot	2-1/2	18
8	20	White rot	2-1/2	19
8	10	Brown rot	1-1/2	12
6	12	White rot	2-1/2	22
6	10	White rot with black zone lines	3	21
6	7	White rot	2-1/2	22
6	6	Green discolorations	1-1/2	15
4	6	Brown rot	2	16
Average				
7.4	19		2-1/4	18